



Natural Heritage & Endangered Species Program

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MASSACHUSETTS PLANTS OF SPECIAL CONCERN

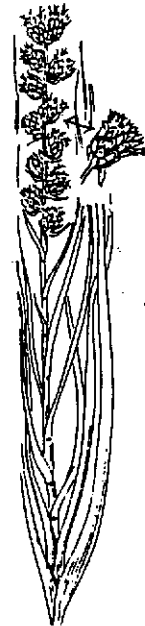
New England Blazing Star (*Liatris scariosa* var. *novae-angliae*)

Description: New England Blazing Star, a member of the composite family, Asteraceae, is an attractive herbaceous perennial plant with tall purple spikes of flower heads in late summer. Particularly striking in mass, blazing stars are cultivated in gardens and for florists. The flower spike of New England Blazing Star has from 3 to 30 tufted, rose-purple heads of 35-60 flowers on smooth or weakly hairy, unbranched stems. The axis of the inflorescence is hairy and is 3 to 35cm (1 to 14 inches) long. The floral bracts are reddish, broad, and rounded, with narrow, almost petal-like margins. The fruits are hard and dry, and are 0.6 - 0.7cm (about a quarter inch) long. New England Blazing Star blooms from late August through October, down from the top of the stem. The plants grow to 30 - 100cm (12 to 39 in) tall and arise from an underground corm. The stem has 20 to 60 densely crowded long narrow leaves below the flower spike; the leaves become smaller above the base of the stem. The basal leaves are 0.5 - 2.5cm wide.

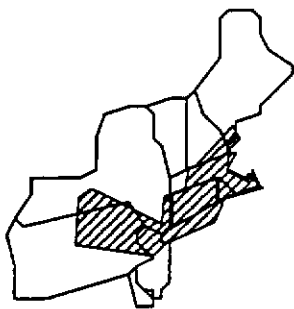
Similar Species in Massachusetts: New England Blazing Star, or Northern Blazing Star, is the only Blazing Star native to Massachusetts. It is part of a complex of species that is typified by a high degree of variation, the occurrence of hybrids where distributions overlap, and poor representation in most herbaria - all of which have rendered classification difficult. Several features distinguish this plant from other taxa, including numerous smooth, narrow basal leaves and numbers of flowers and flower heads. The most common scientific synonym for New England Blazing Star is *Liatris borealis*, the name that is used in the Federal register.

Range: Historically, New England Blazing Star occurred along the coastal plain from southwestern Maine to eastern New York and south to northern New Jersey and inland to central Pennsylvania. No plants have been seen recently in the western New York sites. Unfortunately, it no longer occurs naturally in New Jersey; the last site now has a highway on it. Because of hybridization, the status is confused in Pennsylvania, with the northeastern sites being closest to New England Blazing Star.

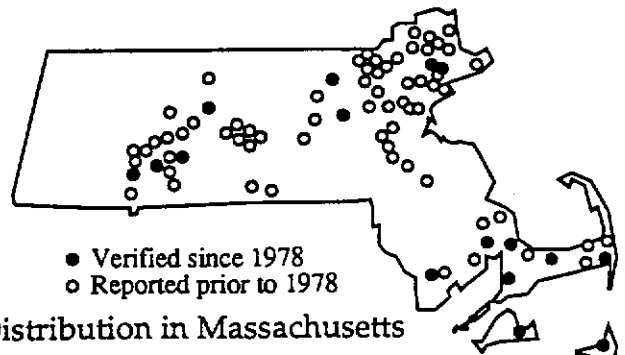
Habitat in Massachusetts: New England Blazing Star occurs in open areas with dry, sandy, low nutrient soils that are supporting early to mid-successional communities, usually sandplain grasslands or coastal heathlands. These rare and local plant communities are scattered along New England coast, persisting where human land use practices and natural stresses from salt spray, fire and storms inhibit the growth of woody shrubs and trees. These conditions are encountered in southeastern areas of Massachusetts, and on sand terraces along the Connecticut River.



Rickett, H.W. 1963. New Field Book of American Wild Flowers. G.P. Putnam's Sons. New York.



New England Blazing Star
Historic Range



● Verified since 1978
○ Reported prior to 1978
Distribution in Massachusetts

New England Blazing Star can also grow in maintained or disturbed areas such as road edges and powerline openings as long as trees are excluded. Species found co-occurring with New England Blazing Star include species of coastal grassland, heathland, and dune systems: Little Bluestem (*Schizachyrium scoparium*), Pennsylvania Sedge (*Carex pensylvanica*), Sweet Fern (*Comptonia peregrina*), Bayberry (*Myrica pensylvanica*), Golden Aster (*Chrysopsis falcata*), and Stiff Aster (*Aster linariifolius*). Sandplain grassland communities generally include Little Bluestem, Pennsylvania Sedge, Hair Grass (*Deschampsia flexuosa*), Wild Indigo (*Baptisia tinctoria*), Bush Clover (*Lespedeza* spp.), and Goat's Rue (*Tephrosia virginiana*). Symbiotic nitrogen fixation aids the survival of the legumes in the highly leached, nutrient poor soils characteristic of grasslands and heathlands; then the litter from these species provides some nitrogen to other species. Also characteristic of grasslands are other low, broadleaved herbs such as asters, Bird's foot Violet (*Viola pedata*), dewberries (*Rubus* spp.) and Bushy Rockrose (*Helianthemum dumosum*). Coastal heathlands, limited to the coast from Maine to northern New Jersey, are dominated by ericaceous shrub communities but have many of the same species occurring in sandplain grasslands. These communities are characterized by the dominance of Bearberry (*Arctostaphylos uva-ursi*), golden heather (*Hudsonia ericoides*), huckleberry (*Gaylussacia baccata*), lowbush blueberry (*Vaccinium angustifolia*), or scrub oak (*Quercus ilicifolia*). Heathlands occur as openings within pitch pine scrub oak communities, as parts of mosaics with pine barrens or grasslands, and other places extend over large areas. Community composition in these areas is in part defined by land use history and fire patterning.

Population Status in Massachusetts: New England Blazing Star is currently listed as a Species of Special Concern in Massachusetts and is a candidate species for federal listing. As with all species listed in Massachusetts, individuals of the species are protected from unauthorized collection, picking or killing, and sale under the Massachusetts Endangered Species Act. This species clearly prefers frequent disturbance and shows intolerance of shade or competition from encroaching woody plants; it has lost habitat to widespread succession of open grasslands and heathlands to forests. Changes in human land use practices have had a major part in changing the amount of open land. In the past, grazing, agriculture and fire opened up abundant suitable habitat for this species, as indicated by MNHESP records of historical occurrences from 62 towns and current records from 16 towns (35 documented sites within those 16 Massachusetts towns). Currently it persists in the Southern Connecticut Valley, near Fort Devens, and Middlesex and Essex Counties, but the Cape and the Islands support the largest populations.

Most populations are small and have fewer than 200 individuals. Only a few coastal and inland populations have numbers near or greater than 1000 individuals. Nantucket may have the greatest number of occurrences but the number of individuals per colony is low (<200). Presently, the species is undergoing a significant decline throughout most of its range with recruitment of juvenile plants into wild populations occurring at a very nominal rate. Throughout its entire range, with 67 known (1991) sites, only 20 sites had more than 50 individuals.

MANAGEMENT RECOMMENDATIONS: As with most rare plants, exact needs for the management of New England Blazing Star have not been clearly identified. The following comes from observations of the populations in Massachusetts and studies done with populations in heathlands in southern Maine.

The research conducted in southern Maine demonstrated that prescribed fire increased the number of seeds per flowerhead, possibly as a result of increased nutrient availability for perennial plants whose roots remain viable after a fire. The populations of seed-eating insects immediately after a fire was dramatically less than in unburned plots, or those plots in later years. For sprouts and seedlings, fire removed a thick organic litter layer and left an exposed substrate that maximized the contact between seeds and the soil, which increased germination, and improved light and moisture conditions for the germinated seeds.

While the plant fares well in early to mid-successional communities its ability to compete lessens as shrubs and trees invade the communities. The relationship between the success of New England Blazing Star and the role of fire as a disturbance mechanism indicates that the fire tolerant plants will display more vigorous growth in those periods following a fire. The fire serves to maintain the communities at earlier successional stages and lessens competition. Prescribed burns might be experimentally incorporated into management practices while concurrently serving as a vehicle for research. Mowing, timed to avoid the growing season, would provide some of the benefits seen from fire: woody plants would be reduced and kept from maturing. However, mowing increases thatch layers, so would not have the benefits of increasing seed contact with mineral soil, and probably would not effect the seed predators.

Preservation of sandplain grasslands and heathlands is of the utmost importance as they are being threatened by lack of fire, human caused disturbance such as off-road vehicle use, and complete loss due to development. With the active suppression of fire in moderately natural areas and development on much of the flat, easily drained sandplain soils, the available habitat for New England Blazing Star and other associated species has been disappearing.

Liatris scariosa var. *novae-angliae*

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- Shinner, L.H. 1943. A revision of the *Liatris scariosa* complex. Am. Midl. Natur. 29:27-41.
- US Dept. of Interior/Fish & Wildlife Service. 1993. Plant Taxa for Listing as Endangered or Threatened Species; Notice of Review. Fed. Register 58(188): 51144-51190 (Sept 30).
- Vickery, P. D. and P. Dunwiddie. 1994. Report on the effects of fire on Northern Blazing Star (*Liatris scariosa* var. *novae-angliae*). Report to MA Natural Heritage & Endangered Species Program Division of Fisheries & Wildlife(USFWS).
- Telephone conversations in December 1995 between Patricia Swain, MNHESP and staff at Connecticut Natural Diversity Database, Maine Natural Areas Program, New Hampshire Natural Heritage Inventory, New Jersey Natural Heritage Program, New York Natural Heritage Program, and Pennsylvania Natural Heritage Diversity Inventory-East, and maps from Tom Bredon, NJNHP, and Robert Zaremba, The Nature Conservancy-New York Regional Office.